

REMARKS

Amendments to the Specification

Applicant has amended the Summary of the Invention to concord with the newly amended independent claims.

Applicant has also inserted a new paragraph at Paragraph [0057] that summarizes a portion of the teaching of the disclosure, as regards the "disproportionate" balancing of the bridge.

It is respectfully submitted that no new matter is being added in this new paragraph because all of the statements therein derive from, either explicitly or implicitly, the description and drawings. In other words, a person of ordinary skill in the art, having read the specification, would immediately appreciate that what this invention does is, in effect, a "disproportionate" balancing of the bridge. Stated alternatively, it would be apparent to a person of ordinary skill in the art that the flowmeter balances the ratio of proportionality as the ratio of proportionality changes with temperature. Since these statements are believed to be implicit in the original disclosure, it is therefore respectfully submitted that no new matter is being added by this amendment.

Allowable Subject Matter

Applicant wishes to thank the Examiner for indicating that claims 31, 32 and 34-43 are allowed and that claims 4-24, 46-50, 55, 58 and 59 would be allowable if rewritten in independent form with all the limitation of the base claim and any intervening claims.

Claim Rejections Under 35 USC 102

The Examiner has rejected claims 1, 26 and 30 under 35 USC 102(b) as being allegedly anticipated by Djorup (U.S. Patent 3,995,481).

In response thereto, Applicant has amended claim 1 by inserting two further limitations, namely (i) that the flow ratio signal and the temperature ratio signal have *a ratio of proportionality that changes with temperature* and (ii) that the flowmeter includes

means for *disproportionately* balancing the flow ratio signal and temperature ratio signal *when the ratio of proportionality changes with temperature*.

Djorup teaches a conventional Wheatstone bridge having conventional, proportional balancing. As Djorup states in column 6, lines 48-52, the circuit design provides for ratios that are always proportionately balanced with respect to each other, with zero error between the inputs of the amplifier 29 in Figures 14 and 16 (or of amplifier 37 in Figure 17). As described in col. 6, lines 48-52, ratio of proportionality of the fixed resistor 26 and the flow sensor resistor 10 is balanced proportionately against temperature divider fixed resistor 28 and temperature sensor resistor 27. However, it should be noted that Djorup only teaches *proportionate* balancing, *i.e.* Djorup fails to teach the varying of the bridge divider's ratio as temperature changes. In other words, Djorup does not teach or suggest a changing ratio of proportionality between the flow sensor resistive divider and the temperature resistive divider over a temperature. Simply stated, Djorup does not teach or suggest disproportionate balancing of the bridge, nor does Djorup teach or suggest a ratio of proportionality that changes with temperature. Accordingly, it is respectfully submitted that newly amended claim 1 is novel and non-obvious with respect to Djorup. As claims 26 and 30 depend on claim 1, these claims are also believed to be novel and non-obvious with respect to Djorup.

Claim Rejections Under 35 USC 103

The Examiner makes the following rejections under 35 USC 103:

1. The Examiner has rejected claims 2, 3, 28 and 29 under 35 USC 103(a) as being allegedly obvious in view of Djorup and Gee (U.S. Patent Application Publication 20030212510).

Gee teaches standard Wheatstone bridge and hot wire designs in which the temperature of the heated resistor 16 is maintained and in which the bridge voltage output is corrected based on a thermistor temperature signal rather than by changing or adjusting the sensor overheat and divider ratio. In other words, Gee does not teach or suggest a changing ratio of proportionality or changing the overheat of the heated sensor as

temperature varies. Therefore, Gee does not teach or suggest Applicant's claimed invention.

With respect to the rejections of claims 2, 3, 28, and 29, it is noted that these are predicated on the assumption that claim 1 is anticipated by Djorup. However, as was established in the foregoing section, newly amended claim 1 is neither anticipated nor obvious in view of Djorup. Therefore, it is respectfully submitted that claims 2, 3, 28 and 29 also distinguish patentably over Djorup and Gee, taken alone or in combination.

2. The Examiner has rejected claims 25 and 27 under 35 USC 103(a) as being allegedly obvious in view of Djorup and Bonne (U.S. Patent 5,237,523).

Bonne teaches obtaining the signal data of a fluid flow curve and applying a correction to the output signal for changes in the gas composition including temperature effects. However, Bonne does not teach a bridge circuit, nor does Bonne teach a flow ratio or temperature ratio. Bonne does not teach correction of flow ratio or temperature ratio, nor does Bonne teach changing the overheat of the flow sensor over a temperature range, or any other form of ratio control. Therefore, nothing in Bonne teaches or suggests the claimed invention.

With respect to the rejections of claims 25 and 27, it is noted that these are predicated on the assumption that claim 1 is anticipated by Djorup. However, as was established above, newly amended claim 1 is neither anticipated nor obvious in view of Djorup. Therefore, it is respectfully submitted that claims 25 and 27 also distinguish patentably over Djorup and Bonne, taken alone or in combination.

3. The Examiner has rejected claims 44, 45 and 54 under 35 USC 103(a) as being allegedly obvious in view of Djorup and Seki (U.S. Patent Application Publication 20040025585).

Seki teaches a constant temperature difference in a heated sensor. Seki also teaches a bridge circuit that balances in equilibrium. Seki also teaches a flow output signal that is the difference between two temperature sensors, whereby one temperature sensor is upstream of the heater and one temperature sensor is downstream of the heater. However,

Seki does not teach the operating temperature or overheat of the flow sensor varying with temperature, nor does he teach any ratio control.

In response to the claim rejections, Applicant has amended independent claim 44 by inserting three new limitations, (i) defining a ratio of proportionality between the flow sensor signal and the temperature sensor signal which changes over a temperature range; (ii) specifying that the overheat factor corrects for a changing ratio of proportionality between the flow sensor signal and the temperature sensor signal resulting from changes in temperature; and (iii) balancing the ratio of proportionality between the flow sensor signal and the temperature sensor signal as the ratio of proportionality changes with temperature by providing a bridge signal to the bridge. In view of these amendments, claim 44 now clearly distinguishes over Djorup and Seki, taken alone or in combination. Furthermore, as claims 45 and 54 depend on claim 44, these claims are also believed to distinguish patentably over Djorup and Seki.

4. The Examiner has rejected claim 51 under 35 USC 103(a) as being allegedly obvious in view of Djorup, Seki and Bonne. As claim 51 depends on claim 44, and since claim 44 has now been amended to further distinguish over Djorup and Seki, the rejection of claim 51 is believed to be no longer applicable.

5. The Examiner has rejected claims 52 and 56 under 35 USC 103(a) as being allegedly obvious in view of Djorup, Seki and Gee. As claims 52 and 56 depend on newly amended claim 44, these claim rejections are believed to be no longer applicable.

6. The Examiner has rejected claims 53 and 57 under 35 USC 103(a) as being allegedly obvious in view of Djorup, Seki and Suzuki (U.S. Patent 6,230,560).

While Suzuki teaches using a thermometer to determine the temperature of a fluid, this reference however does not teach or suggest the use of a thermometer signal as a temperature output for controlling the flow sensor operating temperature or overheat while the temperature varies over a temperature range.

With regard to the claim rejections, it is to be noted that claims 53 and 57 depend on newly amended claim 44, and therefore these claim rejections are believed to be no longer applicable because claim 44 has been amended to clearly distinguish over Djorup and Seki.

In view of the foregoing amendments and arguments, it is respectfully submitted that the application is now in a condition for immediate allowance. Applicant respectfully requests favorable reconsideration of this application.


Extension of Time Under 37 C.F.R. 1.136

A check in the amount of \$120.00 is attached hereto as payment for the requested one month extension of time.

If there are any fees due under 37 C.F.R. §§ 1.16 or 1.17 which are not enclosed herewith, including any fees required for an extension of time under 37 C.F.R. § 1.136, please charge such fees to our Deposit Account No. 02-2448.

Respectfully submitted,

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